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Case Report

A Case Report: Successful Management of Post-Traumatic Trigeminal Neuropathy with Transnasal Sphenopalatine Ganglion Blocks

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Abstract

Trigeminal neuralgia poses a significant challenge in clinical management due to its severe and paroxysmal facial pain. This case report discusses the successful management of post-traumatic trigeminal neuropathy in a 70-year-old female who experienced debilitating facial pain following a fall. Despite initial conservative measures, her symptoms persisted, prompting exploration of alternative treatment options. The patient underwent multiple sphenopalatine ganglion blocks, utilizing local anesthetic only, administered transnasally via a cotton-tipped applicator. Significant and sustained relief followed each sphenopalatine ganglion block, leading to a preference for this low-risk option over more invasive interventions like microvascular decompression. This case underscores the potential benefits of sphenopalatine ganglion blocks as an effective, low-risk treatment for refractory post-traumatic trigeminal neuralgia.

INTRODUCTION

Trigeminal neuralgia manifests as severe, paroxysmal facial pain [1]. While it can arise from various etiologies, such as vascular compression and space-occupying lesions, when arising after trauma, it is classified as Post-Traumatic Trigeminal Neuropathy (PTTN). PTTN significantly diminishes a patient's quality of life and correlates with heightened levels of depression and pain catastrophizing [2].

First-line therapy typically involves carbamazepine or oxcarbazepine, which demonstrate high efficacy but carry a potentially substantial side effect burden [3]. Alternatively, agents like gabapentin, pregabalin, and antidepressants such as amitriptyline or duloxetine offer less efficacy but are associated with fewer side effects. For those patients with persistent symptoms, more invasive interventional options are available in the form of various different injections as well as microvascular decompression, ablation, radiosurgery and peripheral neurectomy [4].

Within this therapeutic landscape, a Sphenopalatine Ganglion (SPG) block has emerged as a safe and effective treatment for trigeminal neuralgia [5]. The SPG, located within the pterygopalatine fossa, acts as a crucial relay station for nociceptive signals from the trigeminal nerve. By targeting the SPG, clinicians aim to modulate pain perception and disrupt the pathological neural pathways implicated in trigeminal neuralgia. Here, we discuss a case of PTTN successfully managed with transnasal SPG blocks.

CASE REPORT

A 70-year-old female suffered a mechanical fall after tripping on a curb in a health center parking lot, resulting in impact to her knees and face. Upon arrival to the Emergency Department (ED), she was hemodynamically stable with ecchymosis of the right side of her nose and face. Computed Tomography (CT) of her head revealed a small left frontal subarachnoid hemorrhage, as well as a comminuted nasal bone fracture and orbital fracture. She was closely monitored in the ED until she had a 6-hour stability head CT and then was deemed stable for discharge. For relief of generalized headaches, she took acetaminophen 1000 mg every 8 hours, which provided adequate pain control.

Four days later, she represented to the ED due flashes and floaters in her left eye with a sensation of pressure and filmy vision. Examination revealed a visual acuity of 20/100 in the

left eye, with equal, round, reactive pupils and an intraocular pressure of 8 mmHg in the left eye. A repeat CT head showed resolution of the subarachnoid hemorrhage, and upon evaluation by ophthalmology, she was diagnosed with a traumatic cataract.

Over the subsequent 3 months, she noted graduate improvement in her headaches. However, approximately 3 months post-injury, she experienced a distinct change in the headache pattern, characterized by intensified pain in the left eye and temporal region, along the bridge of the left nose and the corner of her lip. Additionally, she developed intermittent left facial paresthesias, accompanied by sharp, electrical-like pain triggered by cold air, talking and chewing. She was evaluated both by neurosurgery and neurology, and an MRI was obtained with findings of a crossing vessel over the trigeminal nerve; however, it was unclear if this was contributing to her symptoms. She was trialed on various different medications including acetaminophen, baclofen, pregabalin, carbamazepine, Atogepant, and hydromorphone, but none of these provided sufficient relief.

At 3.5 months post-injury, she was referred to the interventional pain management service for consideration of a left trigeminal nerve block given failure of more conservative measures. The patient underwent a left transnasal SPG block approximately 4 months after her injury. During the procedure, a cotton-tipped applicator soaked in 2% lidocaine was advanced through the left nare to the posterior nasopharynx and left in place for 15 minutes. This process was repeated a second time, each application lasting 15 minutes. Immediate post-procedural assessment revealed 80% diagnostic relief, which endured for 3 weeks and then her pain gradually returned to baseline.

Six weeks later, the SPG block was repeated, increasing the number of applications to three, each lasting 15 minutes. Following this intervention, the patient reported 98% relief for 6 weeks, followed by a return to her baseline 8 out of 10 pain intensity. Seven weeks later, another SPG block was performed, this time with four applications, resulting in 100% relief for 6 weeks. The patient continues to receive left transnasal SPG blocks with local anesthetic every 6 to 7 weeks, with reproducible complete relief of her pain for about 6 weeks.

At just over a year since initial injury, the patient was re-evaluated by neurosurgery who ordered a FLARE MRI to further characterized the crossing vessel. The imaging revealed minimal involvement, deemed unlikely to fully account for her symptoms. Although microvascular decompression was considered, the decision was made to proceed with the SPG blocks due to the low-risk and efficacious profile. To date, she has undergone a total of 8 SPG blocks with close to 100% relief for 6 weeks at a time.

DISCUSSION

In this case report, the patient presented with PTTN, marked by debilitating facial pain following a mechanical fall. Despite initial conservative management, her symptoms persisted, prompting consideration of alternative therapeutic approaches. SPG blocks are a promising, low-risk intervention offering targeted modulation of pain perception in trigeminal neuralgia [5]. The repeated administration of SPG blocks resulted in significant and sustained relief, with durations of up to 6 weeks per session. This underscores the potential of SPG blocks as valuable adjunctive treatment for refractory PTTN, providing patients with meaningful periods of pain relief and improved functional outcomes.

In this case report, SPG blocks were performed by applying local anesthetics, specifically lidocaine with or without bupivacaine, using a cotton-tipped applicator inserted through the nasal passages. Alternative methods of completing an SPG block include the injection of dexamethasone mixed with local anesthetic using a specialized device called a Tx360, [6] the administration of intranasal lidocaine spray [7], or the percutaneous infrazygomatic approach under fluoroscopic guidance [8].

The decision to proceed with SPG blocks over microvascular decompression, despite evidence of a crossing vessel over the trigeminal nerve, underscores the consideration of patient preferences, treatment risks, and potential benefits. The low-risk profile and favorable outcomes associated with SPG blocks in this case support their continued utilization as a viable initial treatment option for PTTN.

Overall, this case emphasizes the importance of a multidisciplinary approach and individualized treatment strategies in managing refractory PTTN. Further research and long-term follow-up studies are warranted to elucidate the optimal timing, frequency, and combination of interventions, ultimately improving outcomes and quality of life for patients with PPTN.

REFERENCES

1. Eliav T, Benoliel R, Korczeniewska OA. Post-Traumatic Trigeminal Neuropathy: Neurobiology and Pathophysiology. Biology (Basel). 2024; 13(3): 167. doi: 10.3390/biology13030167. PMID: 38534437; PMCID: PMC10967710.

2. Smith JG, Elias LA, Yilmaz Z, Barker S, Shah K, Shah S, et al. The psychosocial and affective burden of posttraumatic neuropathy following injuries to the trigeminal nerve. J Orofac Pain. 2013; 27(4): 293-303. doi: 10.11607/jop.1056. PMID: 24171179.

3. Cruccu G, Di Stefano G, Truini A. Trigeminal Neuralgia. N Engl J Med. 2020; 383(8):754-762. doi: 10.1056/NEJMra1914484. PMID: 32813951.

4. Bandary DE, Lustofin SV, McLaren JR, Dillon JK. Surgical Management of Post-Traumatic Trigeminal Neuralgia - Case Report and Review of the Literature. J Oral Maxillofac Surg. 2022; 80(2): 214-222. doi: 10.1016/j.joms.2021.08.266. Epub 2021 Sep 21. PMID: 34656508.

5. Ho KWD, Przkora R, Kumar S. Sphenopalatine ganglion: block, radiofrequency ablation and neurostimulation - a systematic review. J Headache Pain. 2017; 18(1): 118. doi: 10.1186/s10194-017-0826-y. PMID: 29285576; PMCID: PMC5745368.

6. Candido KD, Massey ST, Sauer R, Darabad RR, Knezevic NN. A novel revision to the classical transnasal topical sphenopalatine ganglion block for the treatment of headache and facial pain. Pain Physician. 2013; 16(6): E769-E778. PMID: 24284858.

7. Kanai A, Suzuki A, Kobayashi M, Hoka S. Intranasal lidocaine 8% spray for second-division trigeminal neuralgia. Br J Anaesth. 2006; 97(4): 559-563. doi: 10.1093/bja/ael180. Epub 2006 Aug 1. PMID: 16882684.

8. Tolba R, Weiss AL, Denis DJ. Sphenopalatine Ganglion Block and Radiofrequency Ablation: Technical Notes and Efficacy. Ochsner J. 2019; 19(1): 32-37. doi: 10.31486/toj.18.0163. PMID: 30983899; PMCID: PMC6447206.